Amendment to the Drawings:

The attached six (6) sheets of drawings, which contain Figures 1-9, replace the original six (6) sheets of drawings containing Figures 1-9.

REMARKS

Claims 1-18 were originally presented for examination. In the aforementioned Office Action, the Examiner rejected claims 1, 11-15 and 17 under 35 U.S.C. §102(e), and claims 2-10, 16 and 18 under 35 U.S.C. §103(a). By this communication, claims 1 and 11 have been amended to more clearly point out patentable features of the invention and distinguish the same over the cited prior art, and claim 15 has been amended to correct a typographical error. Claims 19-22 were canceled in a previous amendment. Applicants request reconsideration of the Application in view of the arguments set forth below.

Amendments to Claims and Drawings

Per the Examiner's suggestion, Applicants have amended the specification to include section headings. In addition, Applicants have submitted new corrected formal drawings. It is believed that the new drawings are free of the defects present in the original drawings, which were noted by the Examiner in paragraph 6 of the Office Action.

Rejections Under §§102(e) and 103(a)

In setting forth his rejection of the claims under §§102(e) and 103(a), the Examiner relied primarily on U.S. Patent Application Publication No. US2006/0038119 by Guevremont et al. ("Guevremont"). Applicants first note that while the subject matter of Guevremont bears some relation to the analysis of ions, the problem addressed by Guevremont is wholly different from the problem addressed by the present Application. The disclosure of Guevremont is directed to the monitoring and adaptation of a periodic waveform used for high field asymmetric waveform ion mobility spectrometry (FAIMS). In FAIMS, ions are separated according to differences in their relative high-field and low-field mobilities by providing a pair of spaced-apart electrodes and applying a periodic asymmetric waveform to one of the electrodes. Guevremont teaches a technique for monitoring and adapting the waveform to ensure that the parameters of the waveform (e.g., amplitudes and phases of the sinusoidal components) remain at target values, thereby ensuring stable and reliable operation of the FAIMS device. The technique includes steps of sampling the waveform to obtain a set

of data points indicative of the generated waveform, processing the data points according to a predetermined algorithm to calculate at least one value, and comparing the calculated value to a template value representative of an "ideal waveform." If the two values vary significantly, then a correction is applied to the waveform.

In contradistinction, the present Application relates to a technique for mass spectrometric analysis, whereby a first cycle of mass spectrometry (comprising steps of preparing ions, detecting the ions to yield data representing the masses and numbers of the prepared ions, and processing the data) overlaps in time with a second subsequently initiated cycle. As discussed throughout the Application, this parallel scheduling technique enables more efficient operation of the mass spectrometer.

Turning to the specific claims, independent claim 1, as amended by the present communication, recites a method of mass spectrometry comprising a plurality of cycles, each cycle including steps of preparing ions to be analysed by a mass spectrometer, using a detector of the mass spectrometer to collect data representative of the quantities and masses of the ions prepared in the previous step, and processing the data. Guevremont does not teach repeated cycles of ion preparation, collection of ion quantity/mass data, and processing of the ion quantity/mass data. While Guevremont uses the term "cycle" in its description, its usage of this term denotes a repeated unit of the asymmetric waveform applied to one of the electrodes, rather than a set of steps employed for analyzing a group of ions by mass spectrometry (see, e.g., paragraph [0026], which states that "[s]ince the asymmetric waveform is repeating rapidly, perhaps in the megahertz range, no two of these A/D data points is sampled from the same *cycle of the waveform*. However, each data point is sampled from somewhere during the *cycle of the waveform*" [emphasis added]). Nowhere does Guevremont teach that ions are prepared during each of its cycles (i.e., during each period of the waveform), as is recited in claim 1. Furthermore, Guevremont does not disclose that ions are detected during each cycle to collect data representative of the quantities and masses of the ions. The "data points" obtained by Guevremont are values of the waveform voltage at particular points in time, and are not derived from or relate in any manner to the detection of ions. Finally, Guevremont does not teach processing of data representative of the quantities and masses of ions; instead, the data processed in the Guevremont are values of the waveform voltage, as noted above.

In sum, since Guevremont fails to teach several limitations recited in claim 1, namely the steps of preparing ions, collecting ion mass and quantity data, and processing the collected data during each cycle of a plurality of cycles of mass spectrometric analysis, the rejection of claim 1 as anticipated by Guevremont is improper and should be withdrawn. Furthermore, there is no reason why one of ordinary skill would be motivated to modify the Guevremont technique to practice the steps recited in claim 1, since Guevremont addresses a wholly different problem than do embodiments of the present invention.

Independent claim 11 recites substantially the same limitations discussed above in connection with claim 1, and is thus submitted to be patentable over the cited prior art for at least the same reasons.

Independent claim 15 is directed to a technique for acquiring full MS and MS^n spectra in a parallel manner, and recites steps of preparing ions and using a first detector of a mass spectrometer to performance of a full MS scan of the prepared ions, while concurrently preparing further ions and using a second detector to perform an MS^n scan of the further ions. These steps are not disclosed in Guevremont. Notably, Guevremont describes techniques for use in FAIMS analysis, whereby ions are separated according to their relative high-field and low-field mobilities. Ion mobility is a property distinct from mass-to-charge ratio (m/z), which is the property on which ions are separated and analyzed in mass spectrometry. The terms MS scan and MS^n scan are well known in the art to mean the acquisition of mass spectra representing observed ion intensities at each value of m/z. Since Guevremont achieves separation of ions by virtue of their mobilities rather than their m/z's, it does not teach using detectors to perform either a full MS or MS^n scan of prepared ions, as set forth in claim 15. Furthermore, the term MS^n scan denotes acquisition of a mass spectrum of product ions resulting from one or more stages of fragmentation. Nowhere does Guevremont teach or suggest any fragmentation of ions prior to analysis. Since Guevremeont fails to disclose or suggest the foregoing limitations recited in claim 15, the rejection of claim 15 under §102(e) is improper and should be withdrawn.

Finally, dependent claims 2-10, 12-14 and 16-18 are submitted to be patentable at least by reason of their dependencies on allowable base claims.

Conclusion

Applicants submit that the Application is in condition for allowance, and such action is respectfully requested. The examiner is invited to contact Applicants' undersigned representative if he believes that doing so will assist to advance the prosecution of the Application.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this communication to Deposit Account No. 50-3267.

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Respectfully submitted,

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